FIG. 1

TO NETWORK

| 101 OPTICAL TRANSCEIVER | → 110 |
| | ← 111 |

| 102 OPTICAL TRANSCEIVER | → 112 |
| | ← 113 |

| 103 OPTICAL TRANSCEIVER | → 114 |
| | ← 115 |

OPTICAL ENGINE 104

PACKET ENGINE 105

121

120

106

107

PROVISIONING COMPUTER 155

Fig. 2

8 in from packet engine — 121

8 out to packet engine — 120

104 — optical engine

205

1:1 protected N×N optical switch, where N = 2n+8, n = 4 (up to 8)

206

207

208

216

217

218

n-channel DWDM — 210

n-channel DWDM

☐ transponder with output λ in 1550 nm region — 215

▨ transponder with output λ at 1310nm

Fig. 3

signals out

signals in

packet engine 404

403

401

optical engine

402
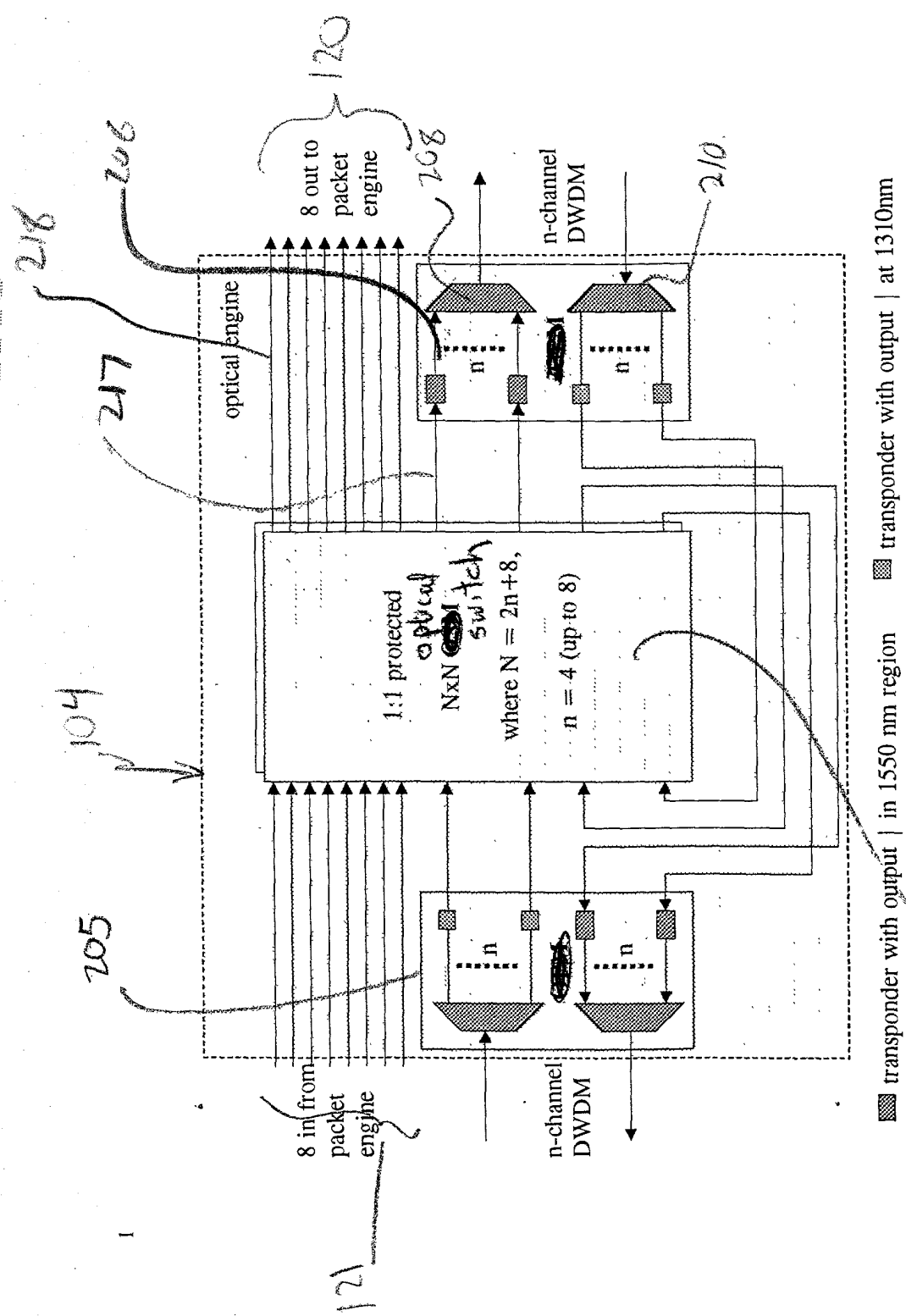
405

404(a)
403(a)
407(a)
401(a)
402(a)

(1)
(2.1)
(2.2)
(3)
(4)

403
401
403
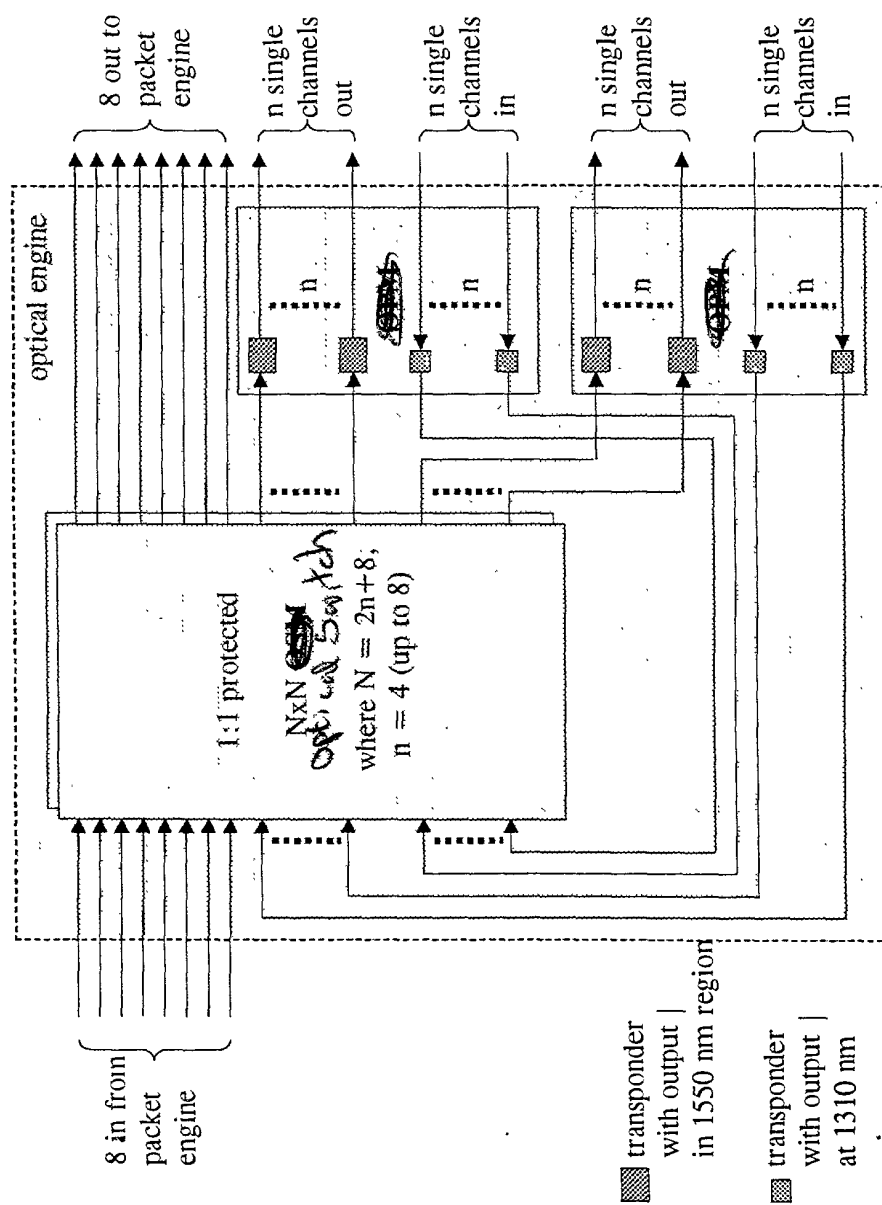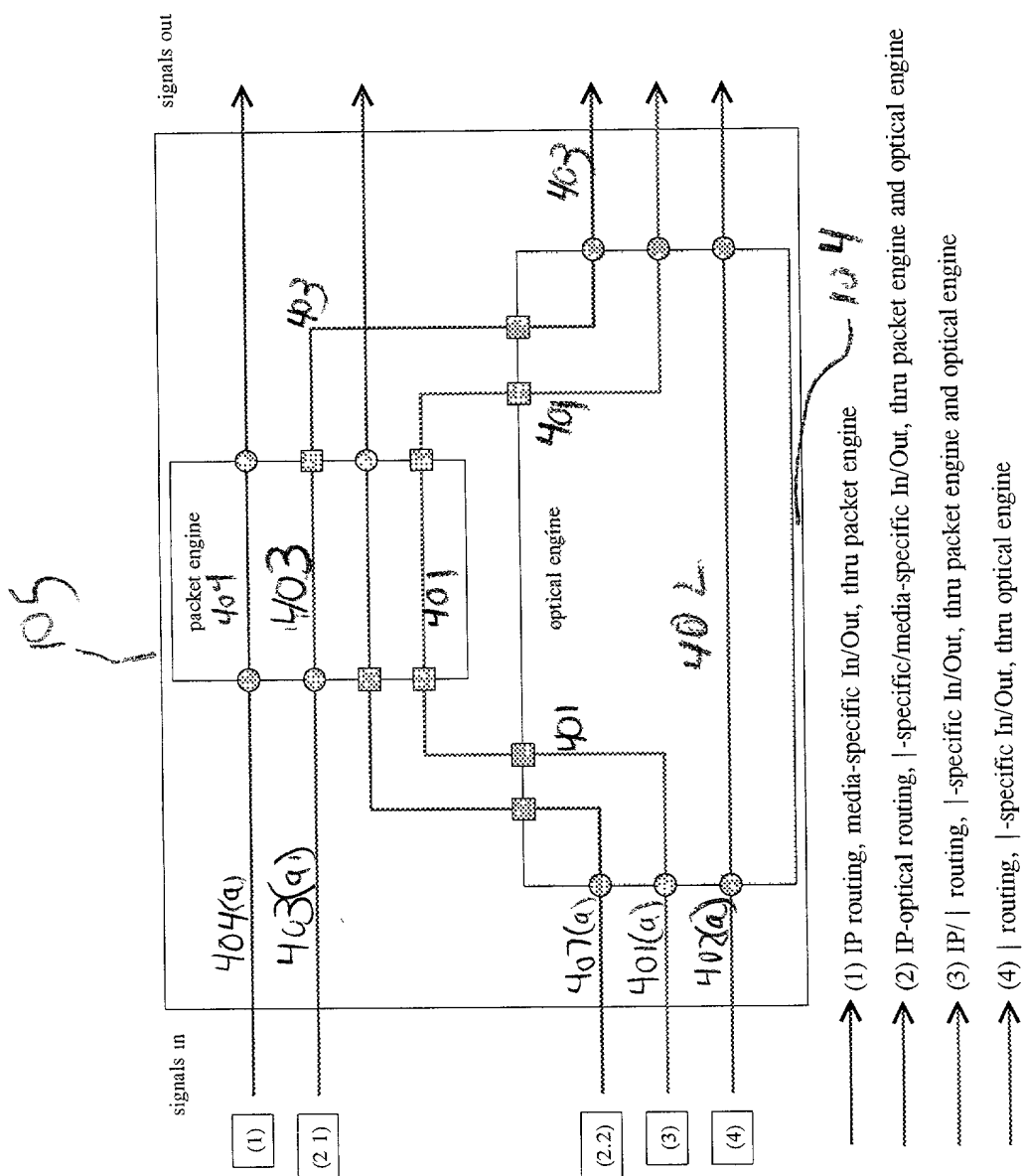405

⟶ (1) IP routing, media-specific In/Out, thru packet engine

⟶ (2) IP-optical routing, |-specific/media-specific In/Out, thru packet engine and optical engine

⟶ (3) IP/| routing, |-specific In/Out, thru packet engine and optical engine
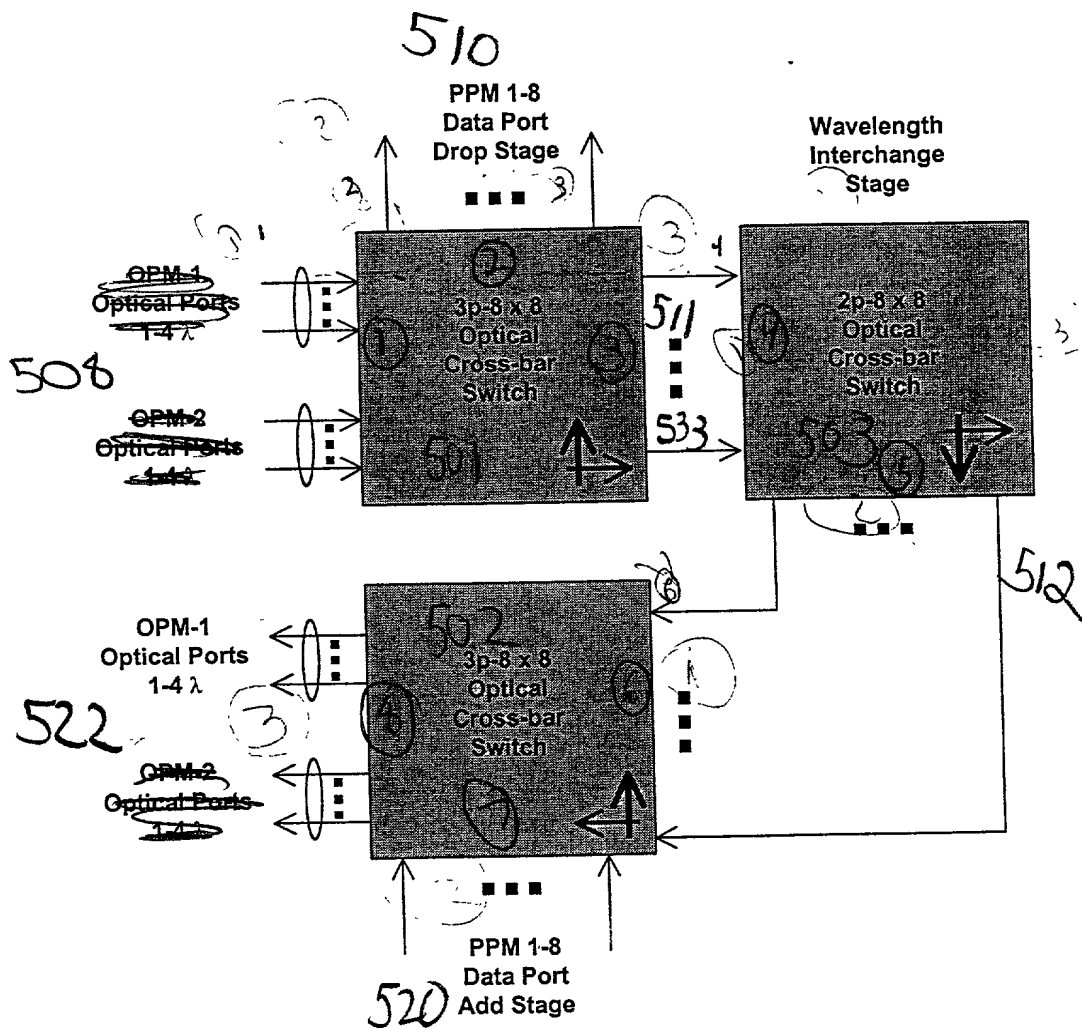
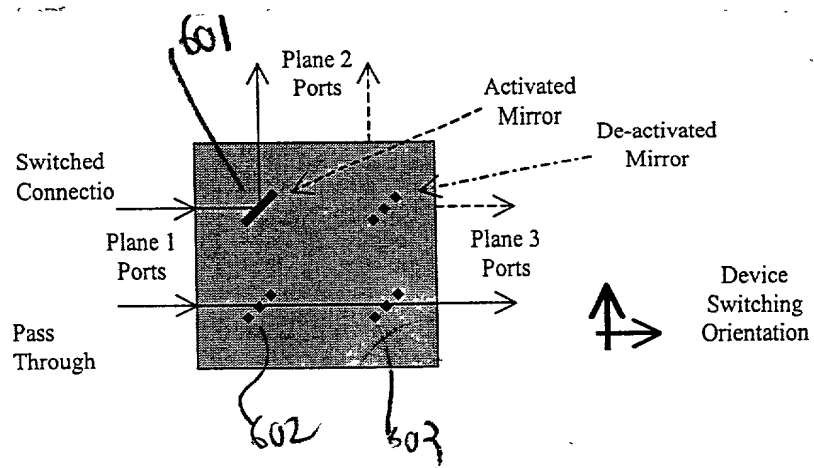⟶ (4) | routing, |-specific In/Out, thru optical engine

Figure 4

510

PPM 1-8
Data Port
Drop Stage

Wavelength
Interchange
Stage

■ ■ ■

OPM-1
Optical Ports
1-4 λ

3p-8 x 8
Optical
Cross-bar
Switch

2p-8 x 8
Optical
Cross-bar
Switch

508

511

533

OPM-2
Optical Ports
1-4 λ

501

563

512

OPM-1
Optical Ports
1-4 λ

502

3p-8 x 8
Optical
Cross-bar
Switch

522

OPM-2
Optical Ports
1-4 λ

PPM 1-8
Data Port
Add Stage

520

1

2

3

Figure 5

601

Plane 2
Ports

Activated
Mirror

De-activated
Mirror

Switched
Connectio

Plane 1
Ports

Plane 3
Ports

Pass
Through

Device
Switching
Orientation

15
16
17

602   603

Fig. 6